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Henderson in vol. xii. of our *Memoirs*, and the results are contained in three tables.

In Table I. we have the instrumental readings for each star observed by reflexion and directly, with the corresponding readings of the barometer and thermometers.

In Table II. each double altitude is corrected for refraction and reduced to its *mean* value for January 1 of the year of observation, and also for January 1, 1849.

Table III. contains the coefficients of parallax and of the correction to be applied to the assumed constant of aberration, as well as of the annual proper motion of each star to reduce the place to January 1, 1849. The excess of the *observed mean* altitude for 1849 above an *assumed mean* altitude is also given, and thus an equation of condition is formed for every observation of each star. We have thus six sets of equations for the two stars, each of which is solved by the method of least squares.

As a final result Mr. Maclear finds that

the parallax of α Centauri = 0″·9187 probable error = 0″·034
the constant of aberration = 20″·53 probable error = 0·038

The former investigation in vol. xii. of the *Memoirs* gave 0″·9128 for the value of the parallax of α *Centauri*, and 20″·52 for the constant of aberration.

Mr. Maclear adds that his valued first assistant, Mr. Mann, has commenced a fresh series of observations of this remarkable star with the mural circle, and that he is himself attacking the parallax in right ascension with the 8½-foot equatoreal. At the Cape and at Madras, observations for determining the orbit are making very diligently and with powerful equatoreals.

Observations of Zodiacal Light in 1851. By Mr. Lowe, Highfield House, near Nottingham.

January 22^{d} 6^{h} 30^{m}.

Apparent, but confused.

January 23^{d} 7^{h}.

Tolerably brilliant by fits, situated between α and β *Pegasi*; the edges too confused to enable them to be accurately marked.

January 27^{d} 7^{h}.

Brilliant by fits, the upper edge to the west of *Saturn*; the north edge passed near α *Pegasi*.

March 20^{d} 8^{h}.

Stars bright. The zodiacal light is better defined on its edges than it had been noticed here this year.

Extent of base on horizon, 23° 30′. Its southern edge cut the horizon 1° 30′ S. of W., and its northern edge 22° N. of W.

	°	′
Mean Long. of Apex	49	30
Maximum Long. of Apex......	51	0
Minimum Long. of Apex......	48	0

Axis, 0° 15′ N. of Pleiades, and the horizon 10° 15′ N. of W.

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The north edge was brightest; it passed midway between β and γ *Arietis* (when at rest) and extended to τ *Arietis*. Its southern edge cut the star μ *Ceti*.

The phenomenon of pulsations of greater and less brilliancy was very apparent and was thought to be in periods of 30^s; when at its minimum brightness, the outline was scarcely distinguishable.

At three different periods during the observations the light widened in extent; and this widening took place each time when the light was at its maximum brightness. This was first noticed at $7^h\ 55^m$, when the north edge extended to β *Arietis*. Again, at $7^h\ 59^m$, when the north edge extended midway between β and α *Arietis*, and thirdly, at $8^h\ 3^m$, when it covered α *Arietis;* it remained in this widened state from 1^s to 3^s, returning each time to its mean place between β and γ *Arietis*. Once, when very dim, the north edge was thought to have receded to γ *Arietis* (viz. at $7^h\ 50^m$). The southern edge was not so narrowly watched, owing to a want of guide stars, so that I cannot speak positively as to whether it receded when the north edge advanced, yet the impression made at the time was, that it did not; and once (at $7^h\ 59^m$) was thought to have widened with the northern edge.

March $22^d\ 8^h$.

Pale and confused; pulsations of brightness.

The weather, especially in February and March, has been very much clouded in the evening, which was unfortunate.

Modifications of the Formulæ for computing the Latitude from extra-meridian Altitudes of the Pole Star. By Mr. John Riddle, F.R.A.S., of the Royal Nautical School, Greenwich Hospital.

"In the preface to the *Nautical Almanac*, p. xi., the following formula is given for finding the latitude from an extra-meridian altitude of *Polaris*.

$$l = a - p \cos h + \tfrac{1}{2} \sin 1'' \ (p \,.\, \sin h)^2 \tan a$$
$$- \tfrac{1}{3} \sin^2 1'' \, (p \,.\, \cos h)\, (p \,.\, \sin h)^2$$

where l = latitude
a = true altitude of star
p = apparent polar distance of star in seconds of arc
h = hour-angle of star = sid. time — R.A. of star.

"I call these corrections c_1, c_2, c_3, and I express the two smaller corrections c_2 and c_3, in *minutes* of arc, and keep p also in minutes in the formulæ for c_2 and c_3.

"Since $c_1 = p \cos h$; $(p \sin h)^2 = p^2 - c_1^{\,2} = (p + c_1)\,(p - c_1)$; substituting this in the second equation, and reducing to seconds.

$$c_2, \text{ in seconds } = 30 \sin 1' \,(p + c_1)\,(p - c_1) \tan a.$$

"In this expression p and c_1 are still expressed in minutes, and

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